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Who Gets Paid to Save?

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Thanks to recent changes in the tax law, people can contribute more to their tax-deductible and non-tax-deductible savings plans, including 401(k) and Roth IRAs. But should they? The myriad interacting provisions of the tax code make it difficult to predict who gains from government savings incentives and by how much. This study examines how new legislation affects the lifetime tax gains (or losses) of low-, middle-, and high-lifetime earners if they contribute the maximum to 401(k) accounts, traditional IRA accounts, and Roth IRA accounts. The study finds that the new legislation changes little for low- and middle-income earners. Low and middle earners paid higher lifetime taxes under the old tax law if they participated fully in tax-deferred plans and would still do so under the new law. If a new tax credit created by the legislation were extended and indexed to inflation, low earners would break even, but middle earners would still lose. In contrast, participating in a Roth IRA provides a guaranteed and nontrivial lifetime tax saving; however, one need not contribute the maximum to receive the full benefit.

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Executive Summary

Who gains, and by how much from government saving incentives? This is a very tough question to answer because the tax code has myriad interacting provisions, many of which are difficult to fully appreciate. Take workers who contribute to 401(k) plans. They lower their current taxes, but they also raise their future ones. How much their taxes decline when young and rise when old depends on their tax brackets when young and old. But these brackets can change dramatically in response to the size of 401(k) contributions and withdrawals. Changes in tax brackets will, in turn, change the tax savings from mortgage interest payments and other tax deductions. In addition, the level of withdrawals can trigger higher federal income taxation of Social Security benefits and the phase out of itemized deductions under the federal income tax.

Clearly, measuring the net gains from tax-favored saving requires a model of lifetime saving, spending, and tax payments. It also requires detailed federal income, state income, and payroll tax calculators, since all three taxes are potentially altered by contributions to tax-favored accounts. *ESPlanner* (Economic Security Planner), developed by Economic Security Planning, Inc., is a life-cycle financial planning model with highly detailed tax and Social Security benefit calculators that can assess the lifetime tax and spending implications of different types and levels of tax-favored saving.

Gokhale and Kotlikoff (2001) used ESPlanner to study the size and pattern of tax breaks to saving. Their analysis, based on tax law prior to 2001, reached the remarkable conclusion that participating fully in 401(k) or similar tax-deferred saving plans raises the lifetime tax payments of low-income households who earn moderate to high rates of return! This finding is driven, in large part, by increased federal income taxation of Social Security benefits when 401(k) assets are withdrawn.

How much would low-income workers lose by participating in a 401(k) or similar tax-deferred saving vehicle? A lot. Take a 25-year old couple with $50,000 in initial annual earnings and a 6 percent real return on its investments. Rather than lowering the couples' taxes, full 401(k) participation raises lifetime tax payments by 1.1 percent and lowers its lifetime expenditures by 0.4 percent. The lifetime tax hike is 6.4 percent and the lifetime spending reduction is 1.7 percent if it receives an 8 percent real rate of return. These figures rise to 7.3 percent and 2.3 percent, respectively, if taxes are increased by 20 percent when the couple retires!

In contrast, a couple earning $300,000 per year would enjoy a 6.7 percent lifetime tax break, which translates into a 3.8 percent increase in lifetime spending. Such a couple would enjoy a very large lifetime subsidy even if tax rates were raised by 20 percent when it retires.

These figures, while striking, neglect EGTRRA – the Economic Growth and Tax Relief Reconciliation Act of 2001. EGTRRA greatly expands the limits on contributions to tax-deductible accounts, including 401(k), 403b, Keogh, and traditional IRA plans. It also raises the limit on contributions to non tax-deductible Roth IRAs. But, most important for the issue of tax fairness, it provides a significant, but little known, non-refundable tax credit for qualified account contributions up to $2,000 made by low-earning workers.

This study reviews the pre-EGTRRA lifetime tax gains (or losses) available to low-, middle-, and high-lifetime earners from participating fully in 401(k) accounts, traditional IRA accounts, and Roth IRA accounts. It then shows how these subsidies have been changed by the new legislation.

The impact on low- and moderate-income workers of the new tax credit depends on its longevity and degree of erosion by inflation. According to the law, the credit will end in 2007, and prior to 2007, there will be no adjustment to the nominal income levels at which the credit is phased out.

If these provisions are retained, the new tax credit will have a very limited impact on low-income households who save in tax-deferred retirement accounts. On the other hand, if the law is both extended and inflation-indexed, the credit will make tax-deferred saving of low-income workers at least a breakeven proposition from the point of view of lifetime tax payments. For couples with somewhat higher incomes, the tax credits, even if temporary and un-indexed, are more meaningful because such couples pay enough taxes to receive the full value of the non-refundable credit.

Even were the credit made permanent and inflation indexed, it would still leave moderate income households facing higher lifetime taxes from full 401(k) participation. And while low-income workers would gain, rather than lose, from 401(k) participation, their gains would remain extremely small compared to those provided high-income workers.

In contrast to the possibly significant losses and, at best, small gains facing low-income workers from tax-deferred saving either in 401(k) plans or traditional IRAs, participating in a Roth IRA provides a guaranteed and non-trivial lifetime tax saving. Indeed, if the government were to limit all workers to contributing only $2,000 to a Roth, it would convert a highly regressive public policy into one with some semblance of fairness.

While contributing to a Roth unambiguously saves taxes for low-income households compared to not contributing, ever larger contributions to a Roth do not spell ever larger tax saving. Indeed, a typical couple with $5,000 in earnings saves, according to our analysis, more in taxes by contributing $2,000 per year in real terms than it does contributing $5,000 per year in real terms.

Introduction

With the Social Security system under financial pressure from the impending retirement of the baby boom generation, the government is trying to encourage additional saving through retirement accounts. EGTRRA -- the Economic Growth and Tax Relief Reconciliation Act of 2001 -- greatly expanded the limits on contributions to tax-deductible accounts, including 401(k), 403b, Keogh, and traditional IRA plans. It also raised contribution limits of non tax-deductible Roth IRAs. And, in a less well-known provision, it provided a significant non-refundable tax credit to low-income workers for qualified contributions up to $2,000.

The debate on these provisions proceeded with little discussion of the gains to potential winners. And they proceeded with no discussion of the losses to potential losers, since the general presumption is that participating in tax-favored saving vehicles can only benefit workers by reducing their lifetime taxes. As demonstrated in our recent study (Gokhale and Kotlikoff, 2001), this view is true for high-income workers, but mistaken for low- and moderate-income workers who participate fully in 401(k) and similar tax-deferred saving plans.

How can workers end up with higher lifetime taxes and lower lifetime spending by saving in a tax-deferred plan?[1] The answer is simply by raising their taxes in old age by more than they lower them when young, where taxes when young and when old are measured in terms of their value when young – what economists call their present value.

Can this really happen? It surely can, for four reasons. First, relatively large withdrawals from 401(k) and other tax-deferred accounts can place one in higher, indeed much higher, tax brackets in retirement than during one's working years. Second, the government can raise taxes when one retires. Third, significant contributions to tax-deferred retirement accounts can place

[1] The terms "lifetime taxes" and "lifetime spending" refer to present values as of the beginning of one's adult life of all future tax payments and expenditures.

one in lower tax brackets when young. This, in turn, will reduce the value of mortgage interest and other deductions. Third, and very importantly, shifting taxable income from youth to old age can substantially increase the share of Social Security benefits that become subject to federal income taxation.

This study uses *ESPlanner*^{TM} (Economic Security Planner), developed by Economic Security Planning, Inc., to calculate the gains or losses from contributing to tax-deferred as well as non tax-deferred retirement accounts. ESPlanner is a life-cycle financial planning model with highly detailed tax and Social Security benefit calculators. Its purpose is to help households maintain their living standards as they age. ESPlanner takes into account a host of economic and demographic factors. It can be used to evaluate the gains or losses from contributing to retirement accounts by simply running the program under different assumptions about retirement account contributions and comparing the results.

Applying ESPlanner to representative worker households generates some surprising conclusions. Start with workers contributing fully to a typical 401(k) under the old tax law. Specifically, take a typical 25-year old couple that initially earns $50,000 (each spouse earns $25,000), contributes to a 401(k), and earns a 6 percent real rate of return on its investments. Rather than lowering their lifetime taxes, 401(k) participation raises the couple's lifetime tax payments by 1.1 percent and lowers their lifetime expenditures by 0.4 percent. The lifetime tax hike is 6.4 percent and the lifetime spending reduction is 1.7 percent if the couple earns an 8 percent real rate of return. These figures rise to 7.3 percent and 2.3 percent, respectively, if taxes are increased by 20 percent when the couple retires – a very realistic possibility given the federal government's long-term finances.

Compare these results with those for a couple earning $300,000 per year. Assuming a 6 percent real return, this high-income couple receives a 6.7 percent lifetime tax break from 401(k) participation, which translates into a 3.8 percent increase in lifetime spending. At an 8 percent rate of return, these figures are 4.2 percent and 2.3 percent, respectively. Moreover, such couples would enjoy a very large lifetime subsidy even were tax rates to be raised by as much as a fifth when they retire.

These findings, while striking, neglect the Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA). EGTRRA greatly expanded the limits on contributions to tax-deductible accounts, including 401(k), 403b, Keogh, and traditional IRA plans. It also raised the limit on contributions to non tax-deductible Roth IRAs. But, most important for the issue of tax fairness, it provided a non-refundable tax credit for qualified account contributions up to $2,000 made by low-earning workers. Depending on the income of the contributor, the credit can equal as much as 50 cents per dollar contributed.

The credit's impact on poor workers depends on its longevity and erosion via inflation. According to the law, the credit will end in 2007, and prior to 2007 there will be no adjustment to the nominal income levels at which the credit is phased out. If these provisions are retained, the tax credit will do little to nullify the lifetime tax hike low-income households potentially face from participating in tax-deferred retirement plans.

On the other hand, if the law is extended beyond 2007 and the AGI limits that determine eligibility are indexed to keep pace with inflation, the credit will make tax-deferred saving by low-income workers at least a breakeven proposition. For couples with somewhat higher incomes, the tax credits, even if temporary and non-indexed, are more meaningful because such couples pay enough taxes to receive the full value of the non-refundable credit.

Even were the credit made permanent and inflation-indexed, moderate-income households would not qualify for the credit and would still face higher lifetime taxes from full 401(k) participation. And while low-income workers would gain, rather than lose, from 401(k) participation, their gains would remain extremely small compared to those provided high-income workers.

In contrast to the possible losses or, at best, small gains facing low-income workers from tax-deferred contributions, participating in a Roth IRA provides a guaranteed and non-trivial lifetime tax saving. Unlike a 401(k) plan, a Roth IRA does not permit the deduction of contributions. On the other hand, neither principal nor accrued capital income are subject to taxation at the time of withdrawal. The Roth is a good deal for low-income workers even in the absence of the new credit. The new credit, if made permanent and inflation indexed, would significantly improve the tax savings available to the poor from contributing to a Roth.

Indeed, since the Roth provides an unambiguous tax advantage to the poor, it could be used as the basis for equalizing the tax savings across different income groups. As shown here, limiting all workers to contributing at most $2,000 to a Roth would convert a highly regressive public policy into one that delivers roughly the same percentage reduction in lifetime tax payments for all workers.

ESPlanner

ESPlanner smoothes a household's living standard over its life cycle to the extent possible without having the household go into debt. The program has highly detailed federal income tax, state income tax, Social Security's payroll tax, and Social Security benefit calculators. The federal and state income-tax calculators determine whether the household should itemize its deductions, computes deductions and exemptions, deducts from taxable

income contributions to tax-deferred retirement accounts, includes in taxable income withdrawals from such accounts as well as the taxable component of Social Security benefits, and calculates total tax liabilities after all applicable refundable and non refundable tax credits. These calculations are made separately for each year that the couple is alive as well as for each year a survivor may be alive.

The program also takes into account the non-fungible nature of housing, bequest plans, economies of shared living, the presence of children under age 19, and the desire of households to make "off-the-top" expenditures on college tuition, weddings, and other special expenses. Finally, ESPlanner simultaneously calculates the amounts of life insurance needed by each spouse to guarantee that potential survivors suffer no decline in their living standards compared with what would otherwise be the case.

ESPlanner's calculates time-paths of consumption expenditure, taxable saving, and term-life insurance holdings in constant (2001) dollars. Consumption in this context is everything the household gets to spend after paying for its "off-the-top" expenditures – its housing expenses, special expenditures, life insurance premiums, special bequests, taxes, and net contributions to tax-favored accounts. Given the household's demographic information, preferences, and borrowing constraints, ESPlanner calculates the highest sustainable and smoothest possible living standard over time, leaving the household with zero terminal assets apart from the equity in homes that the user has chosen to not sell.

In our use of ESPlanner for this study, we consider how contributing to retirement accounts affects the present values of a household's total tax payments and spending, which is defined as the sum of consumption expenditures, special expenditures, housing expenditures, and life insurance premiums.

Our Stylized Couples

Our stylized couples consist of a husband and wife, both of whom are age 25 and live at most to age 95. Each spouse works to age 65 and earns half of the household's total earnings, which range from $25,000 to $1 million per year when they are 25. Real earnings grow annually by 1 percent. The couples live in Massachusetts and have no initial assets apart from their homes. Each couple has two children. The first is born when the couple is age 25 and the second when the couple is age 30. The market value of each couple's house is set at three times household labor earnings as of age 25.

The couples purchase their homes at age 25 by paying 20 percent down and borrowing the remainder at 8 percent for 30 years. Annual homeowner's insurance, property taxes, and maintenance are set at 0.17 percent, 1 percent, and 1 percent of house value, respectively. Each child attends college for four years. A couple earning $25,000 per year spends, by assumption, $7,500 per child for each year of college. This college expense is set at $15,000 for couples earning $50,000 and $30,000 for couples earning $100,000 or $150,000. For couples earning $200,000 or more per year, annual college expenses are capped at $35,000. There are no bequests apart from the value of home equity, which the couple chooses not to sell.

Contribution Levels

Our calculations assume elective employee contributions and employer matching contributions equal to the average of maximum contributions permitted by employer-provided defined contribution plans. The household's elective contribution is set at 13.5 percent of earnings. The employer-matching contribution is set at 3 percent of earnings. Hence, 401(k) contributions total 16.5 percent of earnings. At this contribution rate, the contribution ceiling limits the household's combined elective and employer contribution to $60,000 at earnings

exceeding of $363,636.36.[2] We assume that this ceiling rises with real wages at the assumed 1 percent real growth rate. In modeling the old tax law, we also apply the current $10,500 limit on elective individual contributions and assume that limit also grows with real wages. In modeling the new tax law, we adhere to the increase in nominal contribution limits specified through 2006, but then allow those limits to grow with real wages.[3]

Our method of determining the lifetime net tax benefit of 401(k) participation is to compare lifetime taxes and spending with and without such participation. But to make the comparison meaningful, we need to ensure that the couple's gross income is the same in both cases. To do so we increase each spouse's earnings in the case they don't contribute to a 401(k) plan by the amount the employer contributes to their plan in the case that they do contribute. Hence, in the no-401(k) participation case, this additional income is subject to immediate federal and state income taxation as well as to payroll taxation.

How an Immediate Tax Break Can Turn into a Lifetime Tax Hike

Table 1 considers our stylized couple that has $50,000 in total initial annual and earns a 6 percent real pre-tax rate of return on its investments inside as well as outside retirement accounts. The table is based on the tax law prior to the 2001 legislation and shows the percentage change in lifetime total tax payments and spending from 401(k) participation. It begins in the first row assuming the couple is not covered by Social Security, has no home, no children, and makes no college tuition payments. The remaining rows add in each of these elements. For each case, the present values of lifetime taxes and spending are formed using the

[2] We assume this ceiling grows at 1 percent real per year.

[3] The new tax law specifies that the contribution limits will be indexed to inflation after 2006. However, we think it is likely that these limits will be adjusted over time for real wage growth. In modeling other changes in the new tax law we assume they continue after 2010 rather than revert back to their current values as formally stipulated in the new law.

same rate of return assumed in generating the data. The figures in the table report the percentage changes in lifetime taxes and spending.

If the couple has only labor earnings, 401(k) participation is a terrific deal, delivering a 26.2 percent reduction in combined lifetime federal-income, payroll, and state-income tax payments and an 8.7 percent rise in lifetime spending. However, once Social Security is included in the scenario, these gains decline dramatically. The reason is the aforementioned federal income taxation of Social Security benefits.

The taxation of Social Security benefits is determined by a complicated formula that taxes no benefits if a special measure of income is below a base threshold, taxes up to half of benefits for income falling between this base threshold and a higher threshold, and taxes up to 85 percent of benefits for income falling above the higher threshold.[4] For single filers these limits are $25,000 and $34,000 respectively. For joint filers they are $32,000 and $44,000 respectively. Congress has intentionally chosen not to index these thresholds. Hence, over time, an ever-larger portion of the elderly will find they are paying federal income taxes on 85 percent of their Social Security benefits.

The further addition of homeownership to the case transforms 401(k) participation into a roughly break-even proposition. The reason is that 401(k) participation lowers tax brackets when young and, consequently, the tax savings from deducting mortgage interest payments. If children are also added to the equation, 401(k) participation turns, on balance, into a bad deal. Children

4 To be precise, to determine the amount of Social Security benefits that must be included in federal AGI, we first calculate provisional income--which is modified AGI (non-Social Security income including tax-exempt interest) plus half of the Social Security benefit. If provisional income exceeds the first threshold, X1, but not the second, X2, half of the excess over X1 or half of the Social Security benefit, whichever is smaller, is included in AGI. If provisional income exceeds X2, then the amount to be included equals the smaller of two items: A) 50 percent of benefits or $6000, whichever is smaller, plus 85 percent of the excess of provisional income over X2 and B) 85 percent of benefits.

make 401(k) participation worse because the value of the tax exemptions for children is reduced when the couple's tax brackets are lowered in their child-raising years.

Finally, if the couple also opts to pay their children's college tuition, 401(k) participation really begins to hurt – specifically, it raises the couple's lifetime taxes by 1.1 percent and lowers its lifetime spending by .39 percent. How does paying college tuition interact with 401(k) participation? Well, when the couple pays college tuition it brings less regular wealth into retirement. Given the structure of federal income tax brackets, 401(k) participation generates a bigger increase in tax brackets in old age than occurs when there is more taxable income, including taxable capital income.

To further clarify the importance of Social Security benefit taxation, Table 1's last row considers how the household with Social Security benefits and payroll taxes, children, housing, and college tuition payments would fare from 401(k) participation were there no federal income taxation of Social Security benefits. In this case, participation lowers lifetime taxes by 2.3 percent and raises lifetime spending by 0.5 percent. Hence, federal income taxation of Social Security benefits can suffice to change 401(k) participation from a good deal to a bad one for moderate-income households.

Table 1's findings show that the gains or losses from 401(k) participation are highly sensitive to each particular household's economic and demographic circumstances. Furthermore, as the next table shows, two households with the same economic and demographic circumstances can end up with different gains or losses from 401(k) participation simply because one household earns a higher rate of returns on its investments than does the other.

Who Wins and Who Loses from 401(k) Participation?

Table 2 shows the impact of 401(k) participation on lifetime taxes and spending assuming our stylized couples earn either a 4, 6, or 8 percent real rate of return on their regular as well as 401(k) assets. In considering this table, note that because U.S. federal tax rate schedules are progressive (average tax rates rise with taxable income), a given percentage change in taxes translates into a higher percentage change in spending (with the opposite sign) for high-income than it does for low-income individuals.[5]

Look first at the couple with $50,000 per year in initial earnings. As we've seen, if the couple receives a 6 percent real return on its assets, 401(k) participation translates into 1.1 percent higher lifetime taxes and a 0.39 percent reduction in lifetime spending. What if the couple earns 8 percent, rather than 6 percent real on its assets? In this case, the tax hike is 6.4 percent, and the spending reduction is 1.7 percent. If, on the other hand, the couple earns a 4 percent real return, 401(k) participation leads to a 3.3 percent reduction in lifetime taxes and a 0.7 percent increase in lifetime spending. This finding --that 401(k) participation is a worse deal if the couple receives a higher rate of return -- may seem odd because the gain from deferring capital income taxes is greater the larger is the rate of return. The explanation is, again, that higher retirement account withdrawals spells greater Social Security benefit taxation as well as higher marginal tax brackets.

Consider next the table's finding for upper income households. Households with incomes of $200,000 or more enjoy a very significant tax reduction from 401(k) participation regardless of the rate of return. The rich fare well, in part, because they already in top tax brackets and can't be driven into higher ones by participating in a 401(k). In addition, the full 85

[5] Let S stand for the spending, E for earnings, T for taxes, and B for benefits, all measured in present value. Then $\Delta S/S = (T/(E+B-T))\Delta T/T$.

percent of their Social Security benefits will be subject to income taxation regardless of their participating in a 401(k) plan.

The super-rich, represented in this table by a couple earning $1 million per year, don't fare as well in percentage terms as their somewhat less rich counterparts because their 401(k) contributions are subject to Congressionally imposed limits. Whether the rate of return is 4, 6, or 8 percent, the $1 million couple enjoys a roughly 3 percent increase in its lifetime spending. In absolute dollars, under the 6 percent return scenario, the spending improvement corresponds to about $20,000 per year.

The Impact of Changing Social Security Benefit Taxation

How would the gains from 401(k) participation change were Congress to index for inflation the threshold limits, which determine taxable Social Security benefits? For the $50,000 household, inflation indexing raises the nominal values of the thresholds and eliminates Social Security benefit taxation in the no-participation case. But with participation, indexing the limit makes no difference to Social Security benefit taxation.

The reason is that the 401(k) withdrawals are so large that non-Social Security taxable income exceeds the top limit even if that limit is inflation indexed. Indeed, despite the indexation of the thresholds, the full 85 percent of Social Security benefits remains taxable. Given that indexing the limits lowers the Social Security benefit taxes paid by the non 401(k) participating household and leaves unchanged the taxes paid by the 401(k) participating household, indexation makes participating in a 401(k) an even worse choice. Another option is eliminating Social Security benefit taxation altogether. Doing so changes all the negative lifetime spending changes in the 6 percent Table 2 column to positive values and reduces the size of spending reductions in the 8 percent column.

The Implications of Future Tax Increases and Bracket Adjustments

Table 3 repeats Table 2 but assumes that federal income tax rates will be increased by 20 percent when the couple reaches age 65. For a low-income ($25,000) couple earning 8 percent real, lifetime taxes are raised by almost 11 percent and lifetime spending is reduced by just over 2 percent. In contrast, high-income households continue to benefit substantially from their 401(k) saving program. For example, at a 4 percent real return, a couple earning $300,000 enjoys an 8.2 percent reduction in lifetime taxes that finances a 6.3 percent increase in lifetime spending. The gap in treatment between these two couples is, then, 8 percent of lifetime spending.

Indexing federal income tax brackets to nominal wages rather than the price level is another policy we considered. This assumption precludes real bracket creep and means that our stylized households will be in lower tax brackets in retirement. Nonetheless, this assumption makes little difference to calculated gains and losses from 401(k) participation.

Reducing Contributions

If fully participating in 401(k) plans is a bad deal for low-income workers, how would they fare if they reduced their contributions by 50 percent? The answer is much better. For example, at a 6 percent real rate of return, the $50,000 couple now enjoys a lifetime tax cut of 2.6 percent and a lifetime spending gain of 0.64 percent. Another way to limit contributions is to stop contributing after a certain number of years or to delay the onset of contributions. Either practice can transform 401(k) participation into a much better deal for the poor.

The fact that low- and moderate-income workers are likely to do better contributing less than the maximum allowable amounts (together with the severe borrowing constraints they are likely to face in making maximum contributions) helps explain the findings in Poterba, Venti,

and Weiss (2001) that 401(k) participants typically contribute only about 9 percent of their earnings to their plans.

401(k) Participation and The New Tax Law

The low-income contribution tax credit provides, in the case of married couples filing a joint return, a 50-cent tax credit for each dollar contributed by the individual (as opposed to his or her employer) up to $2,000 provided adjusted gross income is less than $30,000. For gross income between $30,000 and $32,000, the credit is provided at a 20-cent per dollar rate. And for gross income between $32,000 and $50,000 the credit is provided at a 10-cent per dollar rate. There is no credit if gross income exceeds $50,000.

Table 4 repeats Table 2 for the 6 percent return case for three different assumptions about the evolution of the new contribution tax credit. The first is that it the law is not changed, so that the credit is terminated after 2006. The second is that the credit is extended, but the thresholds for the credit aren't indexed for inflation. And the third is that the credit is extended indefinitely and the thresholds are indexed for inflation.

For the $25,000 couple, the credit does relatively little unless it is made permanent and indexed for inflation. In this case, 401(k) participation becomes a break-even proposition. The reason that the credit does relatively little for this couple, even if extended and indexed, is that the amount of the credit the couple ends up receiving is limited. The credit is available only to the extent that taxes are actually paid; i.e., it is non refundable. Since each year's available credit exceeds the couple's tax liability for that year, the couple never enjoys the full advantage of the credit.

If the couple starts out earning $35,000, the credit is more effective because the couple has more taxes against which the credit may be offset. Indeed, even if the credit is only

temporary, the $35,000 will still break even, when one measures the policy in terms of its impact on lifetime spending. If the credit is made permanent and indexed, the couple will enjoy a 0.3 percent increase in lifetime spending. This, of course, is still small potatoes compared with the treatment of the rich.

Contributing to Regular and Roth IRAs

Not all employers offer tax-deferred saving plans. For workers in such firms, access to tax-sheltered saving plans is limited to regular or Roth IRAs. The new law raises contribution limits from $2,000 to $5,000 between now and 2008 and then indexes the limit to inflation. Table 5 compares the lifetime tax and spending effects under the new law of investing either $2,000 or $5,000 in real 2001 dollars each year in either a traditional or Roth IRA. The table assumes a 6 percent real return. It also assumes, counterfactually, that low-income workers are able to contribute these same amounts. Finally, it assumes that the contribution credit is permanent and indexed for inflation.

The first two columns of the table deal with contributions to regular IRAs and repeat the lesson learned above that too much tax-deferred saving is to be avoided by low-income households. Take the $25,000 couple. If it makes, on an inflation-adjusted basis, a $2,000 annual contribution to a regular IRA, it lowers its lifetime taxes by 1.2 percent and increases its lifetime spending by 0.2 percent. But if its real contribution is $5,000, rather than $2,000, it raises its lifetime taxes by 38 percent and lowers its lifetime spending by 5.5 percent! In contrast, contributing the same amounts to a Roth IRA generates lifetime tax savings and spending increases in both cases. Lifetime taxes are lowered by 9.5 percent and spending rises by 1.4 percent for the lowest-income households when their contributions are constant in real terms at $2,000 annually. When the contributions are maintained in real terms at $5,000 per

year, lifetime taxes are reduced by 9.0 percent and lifetime spending increases by 1.3 percent. These percentage spending increases are larger than those enjoyed by higher-income households if they, too, contributed similarly to Roth IRAs, but did not contribute to any other retirement account. This reflects the fact that a fixed annual Roth contribution is a smaller share of earnings the higher the household's income level.

For households with initial earning less than $50,000 per year, tax savings and spending gains are both smaller when Roth-IRA contributions are $5,000 per year than when they are $2,000 per year. A similar result obtains for the same households if Roth contributions grow faster than inflation by 1 percent annually rather than remaining fixed in real terms. The explanation for this surprising result is that larger Roth contributions leaves the couple more liquidity constrained. Hence, when the second child arrives, the couple spends less on that child's consumption if it's contributing $5,000 to the Roth than if it's contributing $2,000. In spending less on the second child's consumption, the $5,000 contribution couple saves more in non tax-favored assets and ends up paying more taxes on its non tax-favored asset income.

Conclusion

The federal government has spent over a quarter of a Century encouraging workers of all stripes to save in tax-deferred retirement accounts. In promoting participation in such plans, the government has encouraged workers to believe they would be saving taxes on a lifetime, rather than simply a short-term, basis. For those at the upper end of the nation's income distribution, tax-deferred saving does, indeed, convey significant lifetime tax benefits. But for those at the lower end, 401(k)s and similar tax-deferred retirement accounts may represent a tax trap rather than a tax shelter. The credit for retirement account contributions included in the new tax law

limits the damage to low-income savers, but does little to change the overall regressivity of tax-deferred saving incentives.

The good news for low- and moderate-income households is that contributing to Roth IRAs is guaranteed to save taxes over one's lifetime. Thanks to the new credit, these savings can be substantial for the lowest-income households. However, despite the credit, the tax gains remain meager for most low- and moderate-income households compared to those available to the rich from tax-deferred saving in general.

If the federal government were interested in transforming today's highly regressive saving incentive policy to one that provides the same percentage lifetime tax reduction at all earning levels, it would do well to consider replacing the current system with a simple Roth IRA available to all workers with a common, but low, contribution limit.

References

Gokhale, Jagadeesh and Laurence J. Kotlikoff, "Does Participating in a 401(k) Raise Your Lifetime Taxes," NBER working paper no. 8341, June 2001.

Gokhale, Jagadeesh, Laurence J. Kotlikoff, and Mark Warshawsky, "Life-Cycle Saving, Limits on Contributions to DC Pension Plans, and Lifetime Tax Subsidies," forthcoming in Public Policies and Private Pensions, Bill Gale, ed., The Brookings Institution, 2001.

Poterba, James, Steven Venti, and David Wise, "The Transition to Personal Accounts and Increasing Retirement Wealth: Macro and Micro Evidence," mimeo, MIT, May 2001.

Table 1

Percentage Change in Lifetime Taxes and Spending from 401(k) Participation

Stylized Couple with $50,000 in Initial Income, 6 Percent Real Rate of Return

Included Factors	Taxes	Spending
Earnings	-26.19	8.68
Earnings and Social Security	-4.71	1.49
Earnings, Social Security, and Housing	-0.56	0.07
Earnings, Social Security, Housing and Children	0.37	-0.19
Earnings, Social Security, Housing, Children, and College Tuition	1.10	-0.39
Earnings, Social Security, Housing, Children, College Tuition, but No Income Taxation of Social Security Benefits	-2.26	.50

Source: Authors' calculations.

Table 2

Percentage Change in Lifetime Taxes and Spending from 401(k) Participation

Calculations Based on Old Tax Law

Real Return →	**4 percent**		**6 percent**		**8 Percent**	
Age-25 Earnings	**Taxes**	**Spending**	**Taxes**	**Spending**	**Taxes**	**Spending**
25,000	-2.70	0.29	1.66	-0.36	9.37	-1.60
35,000	-3.27	0.49	1.88	-0.50	6.53	-1.49
50,000	-3.34	0.70	1.10	-0.39	6.38	-1.73
100,000	-5.23	1.95	-2.40	0.89	0.84	-0.35
150,000	-5.87	2.81	-2.44	1.15	0.38	-0.18
200,000	-8.32	4.33	-5.19	2.62	-2.56	1.24
250,000	-8.97	5.14	-6.55	3.58	-4.23	2.22
300,000	-8.43	5.10	-6.71	3.84	-4.23	2.31
1,000,000	-4.68	3.61	-4.56	3.24	-4.50	2.99

Note: Lifetime taxes and spending refer to the present value of the couples' annual taxes and spending on consumption, housing, college tuition, and life insurance premiums.

Table 3

Percent Change in Lifetime Taxes and Spending from 401(k) Participation Assuming 20 Percent Higher Tax Liability After Retirement

Calculations Based on Old Tax Law

Real Return →	4 percent		6 percent		8 Percent	
Age-25 Earnings	**Taxes**	**Spending**	**Taxes**	**Spending**	**Taxes**	**Spending**
25,000	-2.45	0.30	2.27	-0.51	10.69	-2.03
35,000	-2.85	0.47	2.81	-0.80	7.71	-1.99
50,000	-2.49	0.57	2.10	-0.75	7.29	-2.27
100,000	-4.39	1.94	-1.65	0.71	1.49	-0.71
150,000	-4.94	2.84	-1.73	0.98	0.87	-0.49
200,000	-7.60	4.88	-4.59	2.85	-2.12	1.27
250,000	-8.55	6.15	-5.99	4.10	-3.81	2.50
300,000	-8.15	6.25	-6.29	4.57	-3.75	2.58
1,000,000	-5.01	5.17	-4.79	4.52	-4.55	3.99

Note: Lifetime taxes and spending refer to the present value, discounted at 6 percent real, of the couples' annual taxes and spending on consumption, housing, college tuition, and life insurance premiums.

Table 4

Percentage Change in Lifetime Taxes and Spending from 401(k) Participation for Alternative Assumptions about the Contribution Tax-Credit

New Tax Law, Real Rate of Return is 6 Percent

	Credit Not Extended and Not Indexed		Credit Extended, but Not Indexed		Credit Extended and Indexed	
Age-25 Earnings	**Taxes**	**Spending**	**Taxes**	**Spending**	**Taxes**	**Spending**
25,000	1.35	-0.29	1.23	-0.27	-0.68	0.02
35,000	-0.68	0.05	-0.95	0.11	-2.08	0.34
50,000	1.07	-0.36	1.07	-0.36	0.58	-0.24
100,000	-2.79	1.00	-2.79	1.00	-2.79	1.00
150,000	-3.43	1.58	-3.43	1.58	-3.43	1.58
200,000	-4.97	2.43	-4.97	2.43	-4.97	2.43
250,000	-6.26	3.26	-6.26	3.26	-6.26	3.26
300,000	-6.69	3.61	-6.69	3.61	-6.69	3.61
1,000,000	-4.64	2.93	-4.64	2.93	-4.64	2.93

Note: Lifetime taxes and spending refer to the present values of the couples' annual taxes and spending on consumption, housing, college tuition, and life insurance premiums.

Table 5

Percent Change in Lifetime Taxes and Spending from Participating in Regular and Roth IRA Plans

Constant Annual Contribution in 2001 Dollars

Credit is Permanent and Indexed, 6 Percent Real Rate of Return

	Regular IRA ($2000/spouse/year)		Regular IRA ($5000/spouse/year)		Roth IRA ($2000/spouse/year)		Roth IRA ($5000/spouse/year)	
Age-25 Earnings	**Taxes**	**Spending**	**Taxes**	**Spending**	**Taxes**	**Spending**	**Taxes**	**Spending**
25,000	-1.22	0.18	37.90	-5.47	-9.48	1.37	-8.96	1.29
35,000	-4.59	0.92	9.11	-1.83	-3.98	0.80	-3.85	0.77
50,000	-3.33	0.83	2.87	-0.71	-3.29	0.82	-3.25	0.81
100,000	-2.93	1.07	-3.47	1.27	-3.59	1.31	-3.64	1.33
150,000	-2.27	1.04	-4.45	2.03	-2.63	1.20	-3.95	1.80
200,000	-2.04	0.98	-4.11	1.98	-2.33	1.12	-4.97	2.39
250,000	-1.73	0.89	-3.69	1.90	-2.23	1.14	-4.41	2.26
300,000	-1.50	0.80	-3.38	1.80	-1.97	1.05	-4.00	2.13
1,000,000	-0.68	0.43	-1.55	0.98	-1.03	0.65	-2.25	1.42

Note: Lifetime taxes and spending refer to the present values of the couples' annual taxes and spending on consumption, housing, college tuition, and life insurance premiums. Table assumes, counterfactually, that upper-income couples are eligible to contribute to IRAs.

Table 6

Percent Change in Lifetime Taxes and Spending from Participating in Regular and Roth IRA Plans

Annual Contribution Grows 1 Percent Faster Than Inflation

Credit is Permanent and Indexed, 6 Percent Real Rate of Return

	Regular IRA ($2000/spouse/year)		Regular IRA ($5000/spouse/year)		Roth IRA ($2000/spouse/year)		Roth IRA ($5000/spouse/year)	
Age-25 Earnings	**Taxes**	**Spending**	**Taxes**	**Spending**	**Taxes**	**Spending**	**Taxes**	**Spending**
25,000	1.03	-0.15	45.72	-6.60	-9.31	1.34	-7.50	1.08
35,000	-3.73	0.75	12.62	-2.54	-3.92	0.79	-3.38	0.68
50,000	-3.06	0.76	4.31	-1.07	-3.25	0.81	-2.95	0.74
100,000	-3.26	1.19	-3.37	1.23	-3.61	1.32	-3.54	1.30
150,000	-2.52	1.15	-4.63	2.11	-2.97	1.36	-3.93	1.79
200,000	-2.23	1.07	-4.53	2.17	-2.63	1.26	-5.04	2.42
250,000	-1.99	1.02	-4.05	2.08	-2.51	1.29	-4.84	2.48
300,000	-1.75	0.93	-3.77	2.01	-2.23	1.19	-4.43	2.36
1,000,000	-0.76	0.48	-1.74	1.09	-1.16	0.73	-2.52	1.58

Note: Lifetime taxes and spending refer to the present values of the couples' annual taxes and spending on consumption, housing, college tuition, and life insurance premiums. Table assumes, counterfactually, that upper-income couples are eligible to contribute to IRAs.

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